UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,128	02/26/2004	Sukhdeep S. Hundal	VTX0314-US	1874

7590 02/08/2007

Michael D. Bednarek
SHAW PITTMAN LLP
1650 Tysons Boulevard
McLean, VA 22102

EXAMINER	
NGUYEN, TUAN HOANG	
ART UNIT	PAPER NUMBER
2618	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/786,128	HUNDAL, SUKHDEEP S.	
	Examiner	Art Unit	
	Tuan H. Nguyen	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response To Arguments

1. Applicant's arguments, see applicant's remarks, filed on 11/20/2006, with respect to the rejection(s) of claims 1-17 under 35 U.S.C § 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-2, 4, and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Souissi et al. (U.S PAT. 5,809,059 hereinafter, "Souissi").

Consider claim 1, Takahashi teaches a method for avoiding interference during operation of a first RF device employing a first frequency hopping spread spectrum protocol, comprising: identifying an interference from the at least one other RF device in

the radio communication band employed by the first RF device (col. 2 lines 6-30); and adjusting the frequency of operation of the first device to avoid overlap with the at least one other device (col. 5 lines 62-65).

Takahashi does not explicitly show that in conjunction with the operation of at least one other RF device employing a different communications protocol.

In the same field of endeavor, Soüissi teaches in conjunction with the operation of at least one other RF device employing a different communications protocol (col. 4 lines 59-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, in conjunction with the operation of at least one other RF device employing a different communications protocol, as taught by Souissi, in order to provide a controller in a frequency hopped spread spectrum system operating to assign a best available frequency hopping sequence in a spread spectrum communication system having predefined transmission intervals to reduce the noise and interference by hopping the frequency which will reduce the noise and interference for the transmission.

Consider claim 2, Souissi further teaches the identifying an interference comprises: selecting a plurality of test channels in accordance with a channel structure of the interferer (col. 2 lines 11-24); selecting a frequency that is potentially occupied by an interferer that is the source of the interference in each selected channel (col. 2 lines 11-24); measuring a received signal strength associated with each selected channel

(col. 2 lines 11-21); and identifying the interferer in accordance with the measured received signal strength indicators (col. 2 lines 11-24).

Consider claim 4, Souissi further teaches the at least one other RF device includes a fixed frequency duplex device (col. 4 lines 32-34).

Consider claim 6, Takahashi further teaches the at least one other RF device includes a third device, wherein the third device employs a second frequency hopping spread spectrum protocol (col. 1 line 62 through col. 2 line 6).

Consider claim 7, Takahashi further teaches the first device and the third device operate in the same time domain, wherein the adjusting the frequency of operation comprises intelligent frequency hopping employed by the first device (col. 3 line 50-64), and wherein the hopping frequencies employed by the first device cluster in a first frequency range (col. 9 line 66 through col. 10 line 2).

Consider claim 8, Souissi further teaches measuring a received signal strength indicator associated with the third device, by the first device (col. 5 lines 9-20); converting the received signal strength indicator into interfering signal transmit timing associated with the third device to estimate transmit timing associated with the third device (col. 6 lines 20-26); and adjusting transmit/receive timing of the first device to

avoid interference between the first device and the third device, whereby the first device and the third device do not operate in the same time domain (col. 6 lines 20-42).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Souissi and further in view of Kockmann et al. (U.S PUB. 2002/0071402 hereinafter, "Kockmann").

Consider claim 3, Takahashi and Souissi, in combination, fails to teaches the identifying the interferer comprises determination of a bit error rate of frame error rate.

However, Kockmann teaches the identifying the interferer comprises determination of a bit error rate of frame error rate (page 2 [0026]).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Kockmann into view of Takahashi and Souissi, in order to determine if a carrier frequency has been interfered with. If so, and if a next frame has slots available, the lost slot(s) are resent, along with those next in queue.

5. Claims 5 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Souissi as applied to claims above, and further in view of Kerry et al. ("Amendment to IEEE 802.11a avoids interference with other 5Ghz-Band devices" pages 1-2; retrieve on August 7, 2005; retrieved from the internet < URL: http://standards.leee.org/announcements/pr_80211hwlan.html> hereinafter, "Kerry").

Consider claim 5, Takahashi and Souissi, in combination, fails to teaches the at least one other RF device includes a second device, wherein the second device operates according to the IEEE 802.11 protocol.

However, Kerry teaches the at least one other RF device includes a second device, wherein the second device operates according to the IEEE 802.11 protocol (pages 1-2).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Kerry into view of Takahashi and Souissi, in order to improve channel energy measurement and reporting, channel coverage in many regulatory domains, and dynamic channel selection and transmit power control mechanisms.

Consider claim 9, Adachi further teaches the at least one other RF device further includes a second device, wherein the second device operates according to the IEEE 802.11 protocol (pages 1-2).

Consider claim 10, Takahashi further teaches the first device and the third device operate in the same time domain, and wherein the first device selects hop frequencies, wherein the hop frequencies cluster in a first frequency range, wherein the first frequency range does not substantially overlap the frequency band employed by the second device (col. 3 lines 50-64).

Consider claim 11, Takahashi further teaches the third device includes intelligent frequency hopping capability, whereby the third device selects hop frequencies that cluster in a second frequency range, wherein the second frequency range does not substantially overlap the first frequency range or the frequency band employed by the second device (col. 5 lines 13-22).

Consider claim 12, Souissi further teaches measuring a received signal strength indicator associated with the third device, by the first device (col. 5 lines 9-20); converting the received signal strength indicator into interfering signal transmit timing associated with the third device to estimate transmit timing associated with the third device (col. 6 lines 20-26); and adjusting transmit/receive timing of the first device to avoid interference between the first device and the third device, wherein the adjusting the frequency of operation comprises intelligent frequency hopping employed by the first device, whereby the first device and the third device do not operate in the same time domain, and whereby the first and the third device do not substantially overlap the frequency band employed by the second device (col. 6 lines 20-42).

6. Claims 13-15 and 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Adachi (U.S PUB. 2001/0022806).

Consider claim 13, Takahashi teaches a system comprising: a first RF module, wherein the first module employs a first frequency hopping spread spectrum protocol (col. 2 lines 6-30); at least one additional RF module (col. 2 lines 6-30).

Takahashi does not explicitly show that the first protocol stack and transcoder coupled to the first module; and a system microcontroller in communication with the first module and the at least one additional module, wherein the microcontroller receives and sends instructions through the first module protocol stack and transcoder to adjust the operation frequencies employed by the first module to avoid interference with the at least one other RF module.

In the same field of endeavor, Adachi teaches the first protocol stack and transcoder coupled to the first module (page 2 [0024] and page 6 [0075]); and a system microcontroller in communication with the first module and the at least one additional module, wherein the microcontroller receives and sends instructions through the first module protocol stack and transcoder to adjust the operation frequencies employed by the first module to avoid interference with the at least one other RF module (page 2 [0024] and page 6 [0075]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, the first protocol stack and transcoder coupled to the first module; and a system microcontroller in communication with the first module and the at least one additional module, wherein the microcontroller receives and sends instructions through the first module protocol stack and transcoder to adjust the operation frequencies employed by the first module to avoid interference with the at least one other RF module, as taught by Adachi, in order to control communication across a radiocommunication network, a radiocommunication network system, and

radio terminal apparatuses, all of which improve the throughput of a network system such as a radio LAN.

Consider claim 14, Adachi further teaches the at least one additional RF module comprises a second module, and wherein the second module employs a second frequency hopping spread spectrum protocol (page 2 [0022]).

Consider claim 15, Adachi further teaches the wherein the microcontroller receives and sends instructions through the second module protocol stack and transcoder to adjust the operation frequencies employed by the second module to avoid interference with the first RF module (page 4 [0043]).

Consider claim 18, Adachi further teaches the microcontroller receives and sends instructions through the second module protocol stack and transcoder to adjust the operation frequencies employed by the second module to avoid interference with the frequency band associated with the third RF module (page 1 [0013]).

Consider claim 19, Adachi further teaches the microcontroller receives and sends instructions through the first module protocol stack and transcoder to adjust the operation frequencies employed by the first module, wherein the first module selects hop frequencies from a first frequency range that does not substantially overlap the

band employed by the third RF module (page 7 [0095] and [0096]).

Consider claim 20, Adachi further teaches the microcontroller receives and sends instructions through the second module protocol stack and transcoder to adjust the operation frequencies employed by the second module, wherein the second module selects hop frequencies from a second frequency range that does not substantially overlap the first frequency range or the frequency band employed by the third RF module (page 7 [0095] and [0096]).

Consider claim 21, Takahashi teaches an RF communications device comprising: a first RF transceiver employing a frequency hopping spread spectrum protocol, wherein the transceiver includes capability of detection of an interferer employing a different RF communications protocol (col. 2 lines 6-30).

Takahashi does not explicitly show that the first frequency hopping spread spectrum protocol stack and transcoder coupled to the first RF transceiver; and a microcontroller in communication with the protocol stack, wherein the microcontroller facilitates segregation of a set of channels employed by the first transceiver from a set of channels employed by at least one interferer employing a different RF communications protocol.

In the same field of endeavor, Adachi teaches the first frequency hopping spread spectrum protocol stack and transcoder coupled to the first RF transceiver (page 2 [0024] and page 6 [0075]); and a microcontroller in communication with the protocol

stack, wherein the microcontroller facilitates segregation of a set of channels employed by the first transceiver from a set of channels employed by at least one interferer employing a different RF communications protocol (page 2 [0024] and page 6 [0075]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, the first protocol stack and transcoder coupled to the first module; and a system microcontroller in communication with the first module and the at least one additional module, wherein the microcontroller receives and sends instructions through the first module protocol stack and transcoder to adjust the operation frequencies employed by the first module to avoid interference with the at least one other RF module, as taught by Adachi, in order to control communication across a radiocommunication network, a radiocommunication network system, and radio terminal apparatuses, all of which improve the throughput of a network system such as a radio LAN.

Consider claim 22, Adachi further teaches a second RF transceiver in communications with the microcontroller, wherein the second RF transceiver employs a communications protocol different from the first transceiver (page 6 [0075]).

7. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Souissi and further in view of Kerry.

Consider claim 16, Takahashi and Souissi, in combination, fails to teaches the at least one additional RF module comprises a third module employing an 802.11 protocol,

wherein the microcontroller receives and sends instructions through the first module protocol stack and transcoder to adjust the operation frequencies employed by the first module to avoid interference with the third RF module.

However, Kerry teaches the at least one additional RF module comprises a third module employing an 802.11 protocol, wherein the microcontroller receives and sends instructions through the first module protocol stack and transcoder to adjust the operation frequencies employed by the first module to avoid interference with the third RF module (pages 1-2).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Kerry into view of Takahashi and Souissi, in order to improve channel energy measurement and reporting, channel coverage in many regulatory domains, and dynamic channel selection and transmit power control mechanisms.

Consider claim 17, Adachi further teaches the at least one additional RF module further comprises a third module employing an 802.11 protocol, wherein the microcontroller receives and sends instructions through the first module protocol stack and transcoder to adjust the operation frequencies employed by the first module to avoid interference with the frequency band associated with the third RF module (pages 1-2).

Conclusion

8. Any response to this action should be mailed to:

Mail Stop_____ (Explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Facsimile responses should be faxed to:

(571) 273-8300

Hand-delivered responses should be brought to:

Customer Service Window

Randolph Building

401 Dulany Street

Alexandria, VA 22313

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan H. Nguyen whose telephone number is (571)272-8329. The examiner can normally be reached on 8:00Am - 5:00Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Maung Nay A. can be reached on (571)272-7882882. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information Consider the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

T. N

Tuan Nguyen
Examiner
Art Unit 2618

NAY MAUNG
SUPERVISORY PATENT EXAMINER